Space Weather Forecast

Issued on Thursday, 13 June 2024 at 12:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of isolated Moderate flares (R1-R2 radio blackouts). Slight chance of Minor solar radiation storm (S1) initially, this risk declining into the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate, with an isolated M1.2 at 12/2246 UTC attributed to a small region near the south-centre disc. There are currently 10 sunspot regions on the visible disc. A region close to centre disc is now considered to be a mature region, consisting of a single leader followed by smaller trailing spots and has shown little or no development in recent hours. The largest region is now AR3712 in the southeast, which includes a proliferation of minor trailing spots and an increasing magnetic complexity. The other regions are relatively small and simple.

A filament eruption was observed around 12/1200 UTC in the southeast. The associated coronal mass ejection (CME) may have an Earth-directed component however there is currently no available imagery to do the analysis. A faint CME associated with an M1 flare at 22:46 UTC from an active region near the centre disc may have an earth directed component, however due to imagery drop-outs and its very faint outline this is very difficult to analyse. It may however give some contact with earth early on Day 3 (15 Jun), but this is very low confidence.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow regime. The speed was stable and slow-ambient, around 350km/s through the period. The IMF (Interplanetary Magnetic Field) was weak and unremarkable throughout, with only only small deviations in the important north-south component. Geomagnetic activity was Quiet (Kp 0-1) as a result.

Energetic Particles / Solar Radiation: The high energy (greater than 10 MeV) proton flux has been near, but just below, the S1 threshold, showing a slight decreasing trend over the past few hours.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of isolated Moderate flares, with just a slight chance of isolated Strong flares initially, these most probably from the large region recently rotated around the southwest limb in the near term. The flare risk reduces into the period pending further developments.

Solar Wind / Geomagnetic Activity: Overall geomagnetic activity is expected to remain predominantly Quiet with a chance of Unsettled intervals. However there is a slight chance of Active/G1 (Kp4-Kp5) intervals from Day 3 (15 Jun) should we see any impacts from possible CMEs or coronal hole influences.

Energetic Particles / Solar Radiation: Solar radiation is currently close to S1/Minor solar radiation storm levels, but is expected to ease over the coming days. A chance of further S1 enhancement is maintained for Day 1 (13 Jun), before the risk eases into the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	30	30	30
Very Active	R3 to R5 X	No	5	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	10	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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